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CHROMOSOME NUMBERS IN TWO SPECIES OF *ERGOLIS*

(LEPIDOPTERA: NYMPHALIDAE)

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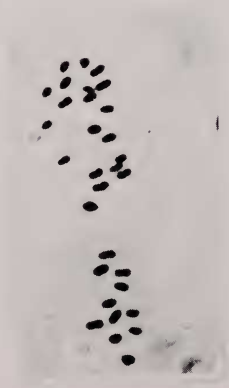
ABSTRACT

Chromosome number of two species of *Ergolis* viz., *E. ariadne* and *E. merione* belonging to the family Nymphalidae is reported, the former for the first time. The role of Robertsonian changes as means of speciation in the genus *Ergolis* is examined.

THE COSMOPOLITAN GENUS ERGOLIS has two representative species in India, viz., *E. ariadne* (Johanssen) and *E. merione* (Cramer) which are distributed all over the country except in arid north and northwest regions (Wynter-Blyth 1957). Although the chromosomes of a number of nymphalid butterflies were hitherto reported, the chromosome number was reported for only two species of *Ergolis* i.e. *E. pagenstechier* by Lesse (1968) and *E. merione* by Rishi (1973, 1975). The present communication reports the chromosome number of the two Indian species, of which, one is worked out for the first time.

The butterflies were collected from the fields around Postgraduate Centre, Guntur, South India. Testes were vivisected from adults immediately after collection and squashed in 2% acetic orcein without prefixation. Both metaphase I and metaphase II stages, and in one species spermatogonial mitotic metaphases were studied. Photographs were taken and camera lucida figures were drawn using a x 100 oil immersion lens.

Metaphase I stages of *E. ariadne* (Fig. 1) whose chromosome number is worked out for the first time, clearly show 31 bivalents. All the bivalents, with an exception of one, are almost of the same size with terminally associated homologues. Terminalisation is complete in all the bivalents by the time the cell enters metaphase I.



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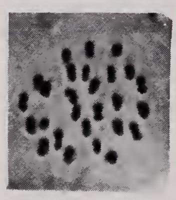

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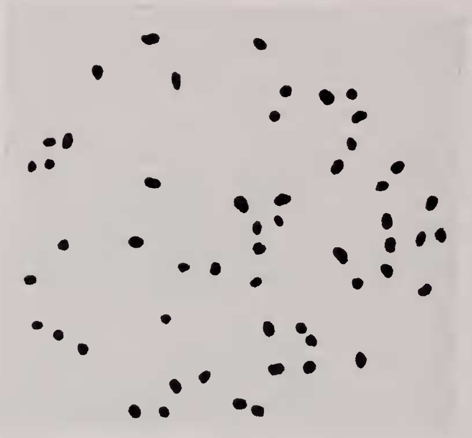

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Fig. 1.—Metaphase I stage of *E. ariadne*.
Fig. 2.—Metaphase I stage of *E. merione*.
Fig. 3.—Mitotic metaphase of *E. merione*.

Metaphase I stages of *E. merione* (Fig. 2) show clearly 27 bivalents with very little size variation. All the bivalents are dumb-bell shaped with fully terminalised chiasma. Mitotic metaphases (Fig. 3) show 54 dot-like, almost isodiametric bodies which again confirm the haploid number as 27.

The haploid chromosome number of *E. ariadne* is the same as the modal number of the order Lepidoptera and also of the family Nymphalidae.

Our observation of 27 haploid chromosomes in *E. merione*, based on studies of both mitotic and meiotic metaphases is at variance with the report of Rishi (op. cit) who claimed to have observed 26 bivalents at metaphase I and 52 elements in spermatogonial metaphase of testes of larvae collected at Chandigarh and Kalka (N. India). The difference in the chromosome number in specimens collected from different regions, if it is well established, indicates the divergence of the species into distinct geographical populations as a first step in speciation.

The remarkable difference in chromosome numbers of the closely related Indian species is well reflected in the readily distinguishable morphological characters. In *E. ariadne*, the forewing is deeply concave between veins 3 and 5, black lines on the dorsal surface of forewing occur singly and the discal line is single in contrast to the much rounded termen, black lines on the dorsal surface of forewing being highly wavy and occurring in twos and discal line being double in *E. merione*. (Wynter-Blyth op. cit).

The divergence in the chromosome number of the three species of *Ergolis* whose chromosome number is now known i.e. *E. pagenstechier* (n=36), *E. ariadne* (n=31) and *E. merione* (n=27) points out that fusion as well as fragmentation seem to have occurred in this genus. That such Robertsonian phenommena, whose occurrence is rendered easier by the diffuse kinetochore in the Lepidoptera, are at play, leading to the establishment of distinct geographical races, subspecies and species, is now widely recognised. (Suomalainen 1965, Bauer 1967).

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